eExam Question Bank

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Question Type	Question	A	B	C	D
FBQ	[ ] is produced when fast moving electrons are stopped as they heat a metal target	x-ray	x-ray		
FBQ	[ ] effect is the emission of electrons from metal surfaces when electromagnetic radiation of high enough frequency falls on them.	Photoelectric	Photoelectric		
FBQ	If two different metals such as copper and iron are joined in a circuit and their juctions are kept at different temperatures, a small e.m.f is produced and current flows. This called [ ] effect	thermoelectric	Seebeck		
FBQ	[ ] of an RLC circuit occurs when the capacitive and the inductive reactances are equal in magnitude	resonance	resonance		
FBQ	Electricity is transmitted at high voltages to avoid loss of power but are distributed at low voltages for domestic use using [ ] transformers	step down	step-down		
FBQ	A [ ] is a device with a low resistance to current flow in one direction and a high resistance for the reverse direction	rectifier	rectifier		
FBQ	Lenz's law is an expression of the principle of conservation of [ ]	energy	energy		
FBQ	The induced e.m.f is directly proportional to the rate of change of flux linkage. This is the statement of [ ] __'s law	Faraday	Faraday		
FBQ	In the equation $\vec{H} = \frac{\vceB}{\mu_o} - \vec{M}$, where the symbols have their usual meaning, the quantity $\vec{M}$ is the [ ]	magnetization	magnetisation		
FBQ	tIn the equation F = q\vec{E} + q \vec{v}\times{\vec{B}} , F is called the [ ] force	Lorentz	Lorentz		

	FBQ	Kirchhoff's loop rule is the statement of the conservation of [ ]	energy	energy		
	FBQ	Kirchhoff's juntion (point) rule is the statement of the conservation of [ ]	charge	charge		
	FBQ	The same electric current flows through resistors in [ ] connection	series	series		
	FBQ	The term 'lost volts' refers to the energy per unit charge dissipated in the [ ] of a cell or battery	internal resistance	electromotive force		
	FBQ	The energy per unit charge converted form other forms to electrical energy is called [ ]	electromotive force	electromotive force		
	FBQ	The resistance R of a piece of conductor is given in terms of its length l and uniform cross-secttional area A as $R=\rho\frac{l}{A}$. The quanity ρ is called [ ] of the conductor	resistivity	resistivity		
	FBQ	In the equation $\vec{J} = nq\vec{v}$, the quantity $\vec{v}$ is the [ ] velocity of the charge carriers	drift	drift		
	FBQ	In the equation $\vec{J} = nq\vec{v}$, the quantity q is called [ ]	current density	current density		
	FBQ	The unit of the quantity, $\frac{q}{t}$, where q is the electric charge and t the time is called [ ]	ampere	ampere		
	FBQ	Electric current is a [ ] quantity.	scalar	scalar		
	FBQ	The $\frac{1}{2} CV^{2}$ =\fracc{1}{2}\frac{Q^{2}}{C}$ represents the [ ] stored in a capacitor	energy	energy		
	FBQ	The figure shown is called [ ]	variable air capacitor	variable air capacitor		
	FBQ	Inserting an dielectric between the plates of a capacitor [ ] its capacitance	increases	increases		
	FBQ	The unit of the quantity, $½ CV^{2}$, is [ ]	joule	J		
	FBQ	The maximum electric field a material can withstand without the occurrence of breakdown is called [ ]	dielectric strength	dielectric strength		

	FBQ	Two 2-μ{F} capacitors in series are in parallel with a 1-μ{F}. The equivalent capacitance of the capacitors is [ ] μ{F}	2	two		
	FBQ	The quantity $\frac{1}{2}\epsilon_{o}E^{2}$ represents the electric [ ]	energy density	energy per unit volume		
	FBQ	In the equation C = Q/V, where the symbols have their usual meaning, the unit of C is called [ ]	farad	farad		
	FBQ	A pair of equal and opposite charges, $\pm{q}$, separated by a vector distance $\vec\{a}$ is called an electric [ ] __ called	dipole	dipole		
	FBQ	If E is the field strength (assumed uniform) and V is the p.d. between two parallel plates which are at a distance d apart, then If E is the field strength (assumed uniform) and V is the p.d. between the plates which are at a distance d apart, then V= [ ]	Ed	dE		
	FBQ	An electrical insulator is also knoqn as a [ ]	dielectric	dielectric		
	FBQ	The negative gradient of an electric potential equals [ ]	electric field	electric field		
	FBQ	The gradient of a scalar potential is a [ ] quantity	vector	vector		
	FBQ	The work done by an external agent to move a test-charge from place to place in a direction perpendicular to the field is [ ]	zero	zero		
	FBQ	If the work per unit charge to bring a unit positive test-charge from infinity to any point on a surface is constant, then the surface may be referred to as [ ] surface	equipotential	equipotential		
	FBQ	The unit 'joule per coulomb $ (JC^{-1})$ is also called the [ ]	volt	volt		
	FBQ	The [ ] at a point in an electric field can be defined as the work done per unit charge moving from infinity to the point	electric potential	electric potential		
	FBQ	The relation $\int\vec{E}\cdot{d}\vec{S}=\frac{\rho}{\epsilon_{o}}$, where S is the surface area and the other symbols have their usual meaning is an expression of [ ] __' law	Gauss	Gauss		

	FBQ	The flux of elctric field through any cross-sectional area is maximum when the angle between the perpendicular to the surface and the direction of the field is [ ]	zero	0		
	FBQ	The [ ] at a point in space is defined as the electric force exerted on a test charge placed at that point	electric field	hshsshsh		
	FBQ	The electric field due to a distribution of charges, according to the [ ] principle, is the vector sum of the fields of the individual charges making up the distribution	superposition	hshsshsh		
	FBQ	In the relation $k=\frac{1}{4\pi\epsilon_{o}}$, ϵ_{o} is the [ ] of free space	permittivity	hshsshsh		
	FBQ	If $Q_{1} and $Q_{2} are the magnitude of two charges and r the distance between them, [ ] _'s law states that the electric force exerted by one charge on the other F is $F=k\frac{Q_{1}Q_{2} }{r^{2}}$, where k is a constant	Coulomb	hshsshsh		
	FBQ	The law of [ ] of charge states that the total electric charge in an isolated system, that is, the algebraic sum of the positive and negative charge present at any time, does not change	conservation	hshsshsh		
	FBQ	A [ ] is the amount of charge that flow through a cross-section of a wire in one second if there is a steady current of one ampere (I A) in the wire	coulomb	coulomb		
	FBQ	Objects with net unlike charges [ ] each other	attract	attract		
	FBQ	Two ebonite rods rubbed with fur and suspended from a rigid support close to each other by threads will [ ] each other	repel	repel		
	FBQ	There are [ ] types of elctric charges	two	2		
	FBQ	[ ] forces, hold electrons to nuclei, atoms and molecules together to give rise to bulk matter	elecrostatic	electrostatic		
	FBQ	The force exerted by charged particles on each other when they are at rest in a frame of reference is called [ ] force	elecrostatic	electrostatic		

	MCQ	A potentiometer wire of length 100cm has a resistance of 10Ω. It is connected in series to to a resistance R and a cell of emf 2V and negligible internal resistance. A source of emf of 10mV is balanced by a length of 40cm of the potentiometer wire. What is the value of the resistance R?	200Ω	950Ω	2000Ω	790Ω
	MCQ	The half-life of a certain radioactive isotope is 32 hours. What fraction of the sample would remain after 16 huors?	0.50	0.25	0.62	0.71
	MCQ	A spectral line is emitted when an atom undergoes transition between two levels with a difference in energy of 2.4eV. What is the wavelength of the line?	287nm	507angstrome units	377angstrome units	518nm
	MCQ	When a copper surface is illuminated by radiation of wavelength 2537 angstrome units the value of the stopping potential is found to be 0.24volts. Calculate the work function of copper.	4.48eV	7.46eV	3.26eV	2.67eV
	MCQ	The work function of a metal is 3.45eV. Calculate th maximum wavelength of a photon that can eject photelectrons from the metal	1.6×10^{-6}m	3.6×10^{-7}m	2.4×10^{-8}m	3.4×10^{-7}m
	MCQ	An RLC circuit is used to tune a radio set to receive NOUN RADIO broadcasting at 105.9MHz in the FM band. The resistance and the inductance of the circuit of the radio set are 12Ω and 1.4μH respectively. What capacitance should the circuit have?	1.64pF	1.51μF	1.33mF	2.11pF
	MCQ	An RLC circiut contains an ac voltage source with rms value of 50V and has a frequency of 600Hz. Suppose that a resistance R = 20 Ω, capacitance C = 10.0 μF and an inductance L = 4.0mH are connected in series to the source. Find the current in the circuit and the voltmeter reading across the inductor.	2.17A and 32.8V	1.6A and 24.2V	0.13A and 12.1V	4.0A and 23.1V
	MCQ	An ac circuit consists of a voltage source $v = 200sin120\pi{t}$ and a 6μF capacitor in series. Calculate the current established in the circuit	0.32A	1.24A	0.64A	2.13A
	MCQ	A voltmeter connected across a 60Hz ac source reads 240V. Write down the expression of the instanteneous voltage as a function of time.	240sin339.4t	339.4sin377t	377cos339.4t	240cos339.4t
	MCQ	An air-cored transformer is assumed to be 100% efficient. The ratio of the secondary turns to the primary turns is 1:20. A 240V ac supply is connected to the primary coil and a 6Ω load is connected to the secondary coil. what is the current in the primary coil?	0.10A	0.14A	2.0A	40.0A
	MCQ	What is the self - inductance of an air-core solenoid, 1m long and 0.05m in diameter, if it has 1400 turns?	5.23mH	4.84mH	3.63mH	2.42mH

	MCQ	A single turn coil of cross-sectional area $7.2cm^2$ is in the a magnetic field of flux desity 0.45T. The field which is perpendicular to the coil, is steadily reduced to 0.0T in 5s. Calculate the induced emf.	0.72μV	0.52μV	0.47μV	0.65μV
	MCQ	The magnetic flux through each loop of a 35-loop coil is given by $(3.6t-0.71t^{3})\times10^{-2}Tm^{2}$, where the time is in seconds. Determine the induced emf at t=5.0s.	6.17V	14.43V	17.49V	9.17V
	MCQ	An ammeter is suspected of giving inaccurate readings. In order to confirm the readings, the ammeter is connected to a silver votltameter in series and a steady current is passed for one hour. The ammeter reads 0.56A and 2.0124g of silver is deposited. What is the error is the ammeter reading?	0.06A	0.11A	1.1A	6.0A
	MCQ	For how long must a steady current of 2A flow through a copper voltameter to deposit 10^{-3}kg of copper? Z for coper is 0.000329g/C	42.1min	22.6min	30.2min	25.3min
	MCQ	A positive ion passes through an electric and magnetic fields which are mutually perpendicular. The electric field strength is 20.0kV/m while the magnetic flux density is 0.40T. At what speed will the ion pass through undeflected?	6.0×10^{4}m/s	5.0×10^{4}m/s	7.0×10^{4}m/s	8.0×10^{4}m/s
	MCQ	An electron enters a uniform magnetic field 0.20 T at an angle of 30^{o} the field. Determine the pitch of the helical path assuming its speed is 3×10^{7} m/s	90.6 m	37.8 m	56.1 m	46.5 m
	MCQ	A proton is accelerated through a potential difference of 100V and the enters a region in which it is moving perpendicular to a magnetic field of flux density 0.20 T. Find the radius of the circular path in which it will travel.	0.9 km	0.7 km	0.3 km	0.5 km
	MCQ	An electric field of 50 kV/m is perpendicular to a magnetic field 0.25 T. What is the velocity of a charge whose initial of motion is perpendicular to both fields and which passes through the fields undeflected?	3×10^{3} m/s	2×10^{5} m/s	4×10^{7} m/s	5×10^{4} m/s
	MCQ	A rectangular coil of dimensions 20 cm by 15 cm lies with its plane parallel to a magnetic field of $ 0.5 W/m^{2}. The coil, carrying a current of 10 A experiences a torque of 4.5 Nm in the field. How many loops has the coil?	100	60	30	20
	MCQ	If the steady current in a wire is coming directly toward you, the magnetic field lines	point radially outward	point radially inward	circle the wire in the clocwise direction	circle the wire in the counterclockwise direction
	MCQ	A magnetic field does not exert a force on a	steel pin	magnet	stationary charge	moving charge

	MCQ	A conductor 2cm long carrying a current of 8A lies at right angles to a magnetic field of which the flux density is 1.0T. Calculate the force exerted on the conductor	0.20N	0.16N	0.25N	0.45N
	MCQ	In the space surrounding a wire carrying a steady current, there exists	a magnetic field pointing radially outward	a magnetic field circling the wire	an oscillating magnatic field	no magnatic field
	MCQ	A series circuit consisting of an uncharged 42μF capacitor and $10 M\Omegaega$ resistor is connected to 100V power source. What are the current in the circuit and the charge on the capacitor after one time constant?	3.7μA and 126μC	4.6μA andC 221\mu$C	7.2μA and 100μC	1.3μA and 52μC
	MCQ	Kirchhof's loop rule is statement of conservation of ----------	mass	energy	charge	momentum
	MCQ	A galvanometer of resistance 120Ω a full scale deflection with a current of 0.0005A. How would you convert it to an ammeter that reads a maximum current of 5A?	connect 2000Ω in parallel to it	connect 200.12Ω in series to it	connect 20.10Ω in series to it	connect $0.012\Omega in parallel to it
	MCQ	Kirchhof's junction rule is statement of conservation of ----------	mass	energy	charge	momentum
	MCQ	Find the current in through the 0.3Ω in the circuit shown	0.69A	3.27A	1.33A	2.15A
	MCQ	In the circuit shown, each of the cells has an emf of 2V and internal resistance of 0.1Ω. Find the current in through the 0.5Ω	0.13A	3.45A	1.27A	2.44A
	MCQ	The term 'lost volts' refers to ----------	energy per coulomb dissipated in the external (load) resistance	terminal potential difference	energy per coulomb dissipated in the internal resistance of the source of emf	energy per coulomb wasted to heat up the connecting wires
	MCQ	A uniform electric field of 200 N/C is in the x-direction. A point charge of 3\mu{C} is released from rest at the origin. What is the kinetic energy of the charge when it is at x = 4 m?	2.4$\times10^{-2}$ J	1.6$\times10^{-2}$ J	3.6$\times10^{-2}$ J	4.8$\times10^{-2}$ J
	MCQ	A positively charged object repels	negatively charged objects	positively charged object	neutral objects	both positively and negatively charged objects
	MCQ	The electric potential difference between two points A and B is 42 V. What is the work done by an external agent in carrying a charge of 5.0$\times10^{-5}$ C from A to B at constant speed?	2.1×10^{-3} J	8.4×10^{-4} J	21$\times10-4$J	8.4×10^{-3} J
	MCQ	1 volt is equal to	1 watt/C	1 J/s C	1 J/C	1 N/C
	MCQ	Which of the following is not true about the electric field intensity $\vec{E}$ of a uniformly charged solid sphere?	$$\vec{E}$$ is maximum at the surface of the sphere	$ $\vec{E}$ is directly proportional to the distance from the centre of the sphere	$\vec{E}$$decreases as a square of the distance from the surface of the sphere	$$\vec {E}$$ decrease as a square of the distance from the centr of the sphere.

	MCQ	From Gauss' law which of the following is NOT correct?	The outward flux of electric field through an enclosed surface is proportional to the electric charges enclosed	The field at a point outside a spherically symmetric charge is the same as the electric field at the same point due to a point charge at its centre.	The electric flux through a Gaussian surface is a vector product of the electric field and a unit vector perpendicular to and outward from the surface	The total electric flux through a cylinder plac in an electric field with axis parallel to the field zero
	MCQ	Charges of ${+}2$ C and ${-2}$ C are situated at points P and Q respectively which are at a distance apart. A point X is mid-way between P and Q. Which of the following correctly describes the electric field and the electric potential at point X?	electric field is toward Q, electric potential is zero	electric field is toward Q, electric potential is negative	electric field is toward P, electric potential zero	electric field is toward I electric potential is positive
	MCQ	Which of the following is a conductor	plastic	copper	glass	silk
	MCQ	Calculate the electric field at distance of 320 cm from an infinitely long wire carrying a charge per unit length 8.3 C/m.	3.26×10^{10} N/C	4.66×10^{10} N/C	8.85×10^{10} N/C	6.22×10^{10} N
	MCQ	Two identical balls balls P and Q, each of mass 0.20 g, carry identical charges and are suspended by two threads of equal length. The balls position themselves at equilibrium such that the angle between the threads is 60_{o}.If the distance between the the balls is 0.5m, find the charge on each of them. Take g = 9.8 m/s^{2}	1.1×10^{-3}C	$2.3\times10^-{6}$C	$1.8\times10^-{7}C	3.1×10^{-5} C
	MCQ	Which of the following can be used to charge a metal rod that si held in your hand? Rub it with	fur	silk	wool	It cannot be done
	MCQ	What are the dimensions of the constant k in Coulomb's law of electrostatics?	$ML^{2}T{-4} T{-2}A{-1}$	$ML^{2}T^{3}A^{-2}$	$M^{-2}L^{3}T^{2}A^{-1}$	$ ML^{3}T^{-4}A^{-2}$
	MCQ	The following are true about electric field lines except that they	are drawn such that the magnitude of the field is proportional to the number of lines crossing a unit area perpendicular to the lines	do not intersect one another	are discontinuous and may terminate in a vacuum	give the direction of motion of a unit positiv test-charge under the action of the electrosta force
	MCQ	A tiny ball of mass 0.60 g is suspended from a rigid support with a piece of thread in a horizontal electric field of intensity 700 N/C. The ball is in equilibrium when the thread is inclined at an angle of 20_{o} to the vertical. What are the magnitude and sign of the charge on the ball? Take g = 9.8m/s^{2}	${-}3.1\times10^{-6}C	3.2×10^{-6} C	$4.2\times10^-{6}$ C	${-}4.1\times10^{-3}$C
	MCQ	Which of the following is not true of an electrostatic force?	it acts along the line joining the point charges	it obeys an inverse square law	it is mutually attractive or repulsive	it is weaker than the gravitational attraction between the charged particles.
	MCQ	A huge spark due to electric discharge in the atmosphere produces all of the following except	Lightning	Rapid expansion of surrounding air	shock waves	gamma radiation.

	MCQ	Three point charges $$2\mu{C$}, ${-}4\mu{C}$$, and $$6\mu{C}$$ are held at the corners of an equilateral triangle with sides equal to 3 cm.What is the resultant force in newtons on the $$2\mu{C}$$ charge?	${-}80\vec{i}+69.3\vec{j}$	$40\vec{i}-63.7\vec{j}$	$80\vec{i}-69.3\vec{j}$	${-}40\vec{i}+63.7\vec{
	MCQ	Two charges $Q_{1} = 500\mu{C}$ and $Q_{2} = 100\mu{C}$ are located on the XY plane at the positions $r_{1} = 3\vec{j} m and r_{2} = 4\vec{i}$ m. Find the force exerted on the Q_{2}	$14.4\vec{i} + 10.8\vec{j}$ N	$14.4\vec{i} – 10.8\vec{j}$ N	$10.8\vec{i} – 14.4\vec{j}$ N	$10.8\vec{i} + 14.4\vec{j}$ N
	MCQ	When amber is rubbed with fur	amber is positively charged while fur is negatively charged	amber is negatively charged while fur is positively charged	amber is positively charged while fur is neutral	amber is negatively charged while fur is neutral

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